

## 'See How They Run'

# Movie Of 1971 Pikes Peak Marathon To Be Main Entertainment Feature Of May 10 PPRAA Meet

"See How They Run"--a movie of the 1971 Pikes Peak Marathon filmed by KNBC of Burbank, California, will be the entertainment feature of the May 10 PPRAA meeting. Rudy Fahl, the ever-youthful athlete in charge of the annual footrace up and down the mountain, will be on hand to add his comments on the film and the race. This will be in addition to the ARRL Field Day discussion slated for the meeting.

Rudy's presentations of films of previous Pikes Peak Marathons to the club in the past have proved most interesting and entertaining and this film promises to be an especially entertaining 45 minute feature for the evening.

The Browns--Wayne, W2PTV/Ø, and Marty, W4VYK/Ø, will be "in charge of events" for the evening--Wayne heading the Field Day discussion and in charge of the entertainment--Marty capably handling the "coffee break refreshments" as she does for all PPRAA meetings.

The meeting, as usual, will start at 7:30 p.m. and be held in the lower level of the Security Savings East Building, East Platte at Union Boulevard. The doors, as usual, will be open at 6:30 for the "early comers."

All PPRAA members are urged to take advantage of the opportunity to see this entertaining film and join in the Field Day activities discussion and, if they desire, to bring a friend to view Rudy's film presentation of the annual marathon up and down Pikes Peak.

-o-o-o-o-

## 'Misoperating' By CB'ers May Spell Death Of 27 Mhz

Commissioner Johnson (FCC) in a recent discussion made several interesting comments about CB'ers and not the least interesting was the statement that a proposal to close down the 27 Mhz Band is frequently received.

Seems that Congressmen get lots of complaint letters from, by or about CB operators on willful interference, obscene language, illegal power, etc. etc.

The Commissioner expressed the feeling that unless CB'ers police their band, they will bring on the death of 27 Mhz CB.

In the meantime we hear that a CB'er with a long record of intentional interference was shot on the front lawn of his home when his fellow CB'ers decided to rid themselves of such interference! It happened in the midwest, too!

Still to await is the rumored FCC action on making 220-222 Mhz a CB band and a rule requiring automatic identification on almost all 2-way radio circuits.

(From "Westpark Radiops")

-o-o-o-o-

When somebody is all for a change, it is likely he hasn't any.

## \*\*\*\*\* \* FCC REPORTS \* \* By Bill Grenfell - W4GF \* \*\*\*\*\*

(From "Auto Call" of the Foundation for Amateur Radio).

-o-

One of the most frequently asked questions I hear involves control of the amateur Station (Section 97.81, Part 97, FCC rules). I have previously dealt with the question, including what call sign to use when one amateur visits another's licensed station location. However, the rapid growth of repeaters also brings up several "control" questions.

When recently queried about the "legality" of a repeater picking up a Technician's transmissions and re-transmitting them outside of the 145-147 MHz Technician subband, the FCC staff advised that the question would be resolved in the repeater rule-making Docket.

In my view, if the technician deliberately uses such a repeater, it would appear that some of the fault is his, also, since it is his station being used to circumvent Sections 97.7 (c) and 97.79, it would appear that the repeater station licensee is not exercising the control of the use of his station required by Sections 97.81 and 97.43 (b) (5).

An inadvertent transmission on a repeater input frequency in a Technician band might excuse the Technician  
(Continued on Page 5)

## Radio Net Has Mission Of Aid For Members Of American Association Of Retired Persons

By Walt Melvin, KØSPR  
From the Pueblo Ham Club's "Grid Leak.")

-o-

The American Association of Retired Persons is one of the fastest growing organizations in the U. S. and it is closely affiliated with the Retired Teachers Association of the U. S. It was organized in 1958 and now has over three million members and has 1,000 chapters nationally, located in all 50 states.

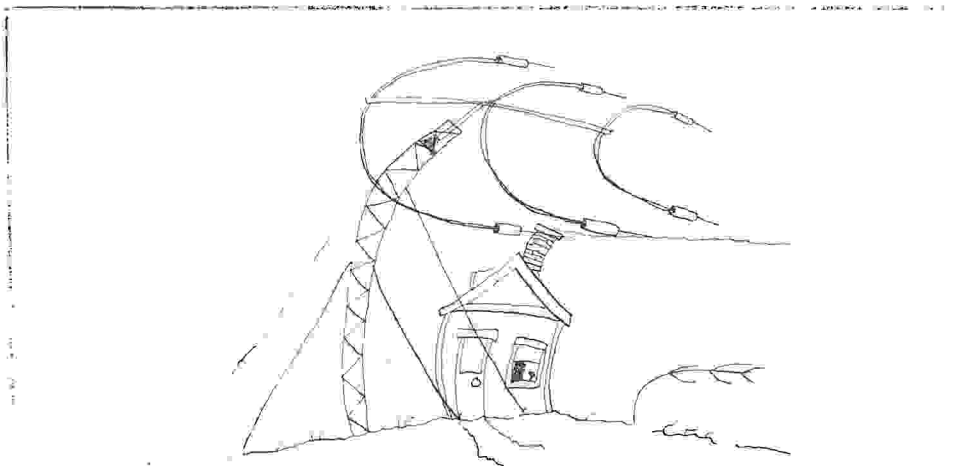
Any person 55 years or older is eligible for membership and does not have to be retired. The annual membership fee is \$2. All officers serve without pay.

The association provides many worthwhile services for its members, such as: Home Pharmacy service at low cost; Magazines and other publications; Group health insurance; Life insurance plans and many other advantages, all at greatly reduced cost.

In July 1971 it was decided by a group of A.A.R.P. Hams in the Los Angeles, California, area that an Amateur Radio Operators net could be of great benefit to the A.A.R.P. membership. The benefits could be to the national organization, the state directors and especially to the individual members of A.A.R.P.

The inaugural transmissions were started August 1, 1971, beginning at 1700 Zulu and lasting for one hour, on the frequency of 14.227 Mhz., Monday through Friday of each week.

Operations have continued since that date and there are now over 200 members of the net representing nearly every state in the nation. New members  
(Continued on Page 3)



"My QTH is very windy, OM!"

WAØHJY

From the Denver Radio Club "The Round Table."

# ZERO BEAT

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The PPRAA meets the second Wednesday of each month in the Security Savings East Building,  
East Platte at Union Boulevard, Colorado Springs

\*\*\*\*\*  
EDITORIAL

## Field Day - What Is Your Idea?

The discussion of how the PPRAA should conduct its annual ARRL Field Day activities, slated for the May meeting, should prove interesting, provided members have given some thought to this matter and are prepared to express their ideas and suggestions at the meeting.

The difference in how to conduct Field Day among PPRAA members--and perhaps among other amateurs as well--probably arises because of differences as to just what is supposed to be accomplished during Field Day.

There are several lines of thought on this matter. Is Field Day a test of the capability of amateurs to handle communications in an emergency--is Field Day a opportunity to demonstrate to the public what can be done with amateur radio communications--is Field Day a contest between amateur radio clubs to see how many points can be "racked up" by operating in the field, a contest to provide a chance for one club to say "we can operate in the field better than other clubs in the area, we have the points to prove it"!

There is still another "angle" which has been followed by PPRAA amateurs on Field Day, especially recently, a chance to get out and enjoy an evening and early morning meal prepared by the (YLs, XYLs, SWOOPS... take your choice) and some good "eyeball QSOs" before, during and after the meals and during "breaks" while someone else relieves you at the operating position--enjoying the "Colorful Colorado" climate (if the weatherman and the weather itself cooperate).

There is also the matter of the location of sites for Field Day operations. Should the site be located, as in the past several years, in the Memorial Park area? If Field Day is a demon-

stration of communications ability for the public to view, this is an ideal location--it is centrally located in the metropolitan Colorado Springs area, also there are crowds attending the ball games nearby who often wander over to see "what the noise and fuss is all about."

If this is to be a contest-type affair, however, this location could be considered bad--it is too easy for the operators to consider "well, I'll drop in to operate for a while, then in the late hours go home to bed and let the others worry about finding someone to operate during the night." If it is to be considered a "social affair" for the PPRAA members, there are many sites more comfortable and better suited.

If instead, as was suggested at the March PPRAA meeting, we pick a site in some more remote area, away from Colorado Springs--a site far enough away that after an operator travelled to the site he would decide to stay longer--perhaps through the night--it might however make it more difficult for the "social type" of activities. It would also be where it would not be a demonstration of amateur capabilities for the public--if such is the conception of Field Day.

It would, of course, if operators stayed longer and consistently operated throughout the night, result in more points for the PPRAA if this is to be considered a contest and perhaps more "actual-type" operating conditions away from the center of the city in case of a "disaster" situation.

Just what is your personal conception, your likes or dislikes, your ideas of how Field Day should be conducted or of where it should be conducted?

Think it over well--consider the various aspects of Field Day--then come to the May meeting prepared to let

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\*\*\*\*\*  
us know just how you think Field Day should be conducted and where it should be located. This is a splendid opportunity to make known your ideas on the subject--take advantage of it--speak your piece or "forever hold your peace."  
-0-

The "fame" of the Pikes Peak Radio Amateur Association is spreading throughout the United States by way of requests from other amateur radio organizations to exchange their publications with Zero Beat to learn more of the activities of our club.

Such "exchanges," of course, also provide Zero Beat with some excellent material and articles which can be reprinted for the information and benefit of Zero Beat readers.

Approximately one exchange request per month has been received during the past year.

Clubs which now receive Zero Beat in return for copies of their publication are:

Aeronautical Center Amateur Radio Club, Oklahoma City, Okla.

Amateur Radio Club International, Tacoma, Wash.

Central California Radio Council (San Francisco Bay Area).

Denver Radio Club, Denver, Colo.

Foundation for Amateur Radio, McLean, Va. (Composed of 27 Amateur Radio Clubs in the Washington-Baltimore-Maryland-Virginia area).

First U. S. Army MARS Information Summary, Alexandria, Va.

The New Mexico Ham, Albuquerque, N. M.

(Continued on Page 3)



## ROSIE'S REPORTINGS

By  
Rosemarie Lewis  
WAØMNL

Bill King, WØLKD, now has some strong competition in his family--his son Charles, WNØEAI, recently passed his General Class exam.

-rr-

Amateurs in the area who had a QSO with the steamship Queen Mary on the weekend the ship was being moved to her permanent berth (in February 1971) received a special QSL card showing the ship in her final place. The card is extra large and is an aerial view of the ship. Also on the card is info about the ship and things a visitor would enjoy seeing.

-rr-

Frank Crow, WØHWH, and his YF, Midori, returned March 21 from a three week trip to Portland, Oregon, and are now taking advantage of the sunny Colorado weather to "dry out" after their rainy stay in the City of Roses. Frank reports that of the 17 days they spent in Portland, they were able to see the sun only two or three days. In fact, Midori reports that while the weather reporters on TV here may say "partly cloudy," the Portland TV weathercasters predicted "partly skies." They had some excitement during their visit--a tornado (very, very rare in that part of the nation) which hit in Vancouver, Washington, across the Columbia River from Portland, and an attempted hijacking at the Portland Airport.

-rr-

Wayne McDaniel, WØMRØ, and YF are moving to Louisburg, West Virginia and hope to QSO friends when they get settled.

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## EDITORIAL

(Continued from Page 2)

Minnesota MARS News Letter, Alexandria, Minn.

Pueblo Ham Club, Pueblo, Colo.  
San Fernando Valley Radio Club,  
Sun Valley, Calif.

Westpark Radiops, Westlake, Ohio.  
West Valley Amateur Radio Assn.,  
San Jose, Calif.

Zero Beat is also going to John Summers Jr., WAØHHN, the PPRAA member probably the furthest distance from Colorado Springs--serving with a U. S. Naval Communications Unit in New Zealand, who, we hope, is sharing Zero Beat and news of the PPRAA with his fellow hams "down Under."

-- Frank, WØHWH

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A woman seldom throws a fit unless there's a man around to catch it.

## The SCM Shack = = = By Clyde Penney, WAØHT

Last month we explored the requirements for appointment as an Official Observer (OO). This month let's take a look at the requirements for appointment as an Official Bulletin Station (OBS).

OBS appointees receive information from ARRL on subjects of current interest to Amateurs for transmission over the air at regular scheduled times. It is most helpful if OBS appointees can copy WIAW directly, where they will receive their Official Bulletins for air release considerably in advance of the arrival of the same bulletin information via the U. S. mails.

Applicants for OBS appointment must

(1) guarantee a minimum of three (3) scheduled transmissions per week; (2) adhere to schedules agreed upon with the SCM; and (3) return information on current or revised schedules on periodic surveys.

Applicants for OBS appointment must submit their qualifications to the SCM, with proposed dates, time and frequencies for transmission of Official Bulletins. The times for transmission of Official Bulletins by an OBS should preferably be those times in designated bands when the largest number of Amateurs would probably be listening. OBS appointees are required to submit a monthly activity report to the SCM.

## Radio Net Aids

(Continued from Page 1)

are joining every day as a result of the operation of the net.

It is hoped to have at least one official member from each of the national chapters. A special national chapter has been authorized and the second meeting was held April 3, 1972, at 1:30 p.m. at 1850 Silver Lake Drive, Los Angeles, California.

Any organization must have a PURPOSE if it is to continue to exist. The A. R. O. purpose is to provide communications to the national organization, the state directors, the local chapters and especially to all the individual members, many of whom are entirely dependent upon their Social Security checks or Old Age Pensions and in many cases cannot even afford a long distance call in case of an emergency. The net is not inten-

ded to handle traffic which would normally be handled by regular mail.

Any additional information concerning the American Association of Retired Persons of the Amateur Radio operators net can be secured by contacting Walter W. Melvin, KØSPR, at 222 East 8th Street, Pueblo, Colorado 81001.

All members of the net must be members of the A. A. R. P. The Pueblo chapter #173 meets the second Monday of each month at the St. Paul United Methodist Church at Routt and Colorado at 1:30 p.m. The wives and OMs of licensed amateur operators are welcome at any meeting.

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Psychologists claim it's a good idea to kiss the children good night--if you happen to be awake when they come home.

-o-

A man never knows what he can do until he tries to undo what he has done.



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# President's Column

Hope none of you were caught in our little "Springtime in the Rockies" snow-storm April 26. At least it gave me a half-reasonable excuse to be late (again) getting this column written as I spent several hours at our Red Cross station WAØVTU handling emergency messages.

As usual, Bill, WØLKD (in Black Forest and Rampart Range) and Bob,

WAØMQE (in Monument) spent long hours helping out stranded motorists. Elmer, WAØWJY, in Monument, was without power for a long time but got on his two meter FM mobile periodically to report in. Let's all remember next year to leave our snow tires on until after April 30!

A pleasant surprise in the mail to-

day--QST--a whole week early! Someone must have heard that we needed info on putting the facsimile machines on the air--very good article on Page 23. Also good article on Page 40 on mobile two meter FM amplifiers. And on Page 52 Mr. Tilton expounds on the "errant nonsense" of crystal-controlled FM gear and the joys of VFO operation.

Someone suggested that Ed change his call to W1NSD. On Page 122 an interesting comment on parasites and on Page 156, W2TPV beats out WØLKW. All very good reading.

Some excellent electronic component surplus coming out recently. Recommend the LM309 regulator for your 5 volt 1 amp IC supplies and give the LED bulbs and displays a try.

Think about what you want to get out of Field Day and what you want to put into it and then come to the May meeting and let your thoughts be known.

73, George, WØGCH  
-0-0-0-0-

## TELETYPE DOUGHNUTS -- *The 88 Mhy Toroid*

(From the SoCal Army MARS "Monthly Signal" via the First U. S. Army MARS "Information Summary.")

-0-

Teletypers make liberal use of a small doughnut shaped toroid coil--a device that is somewhat of a mystery to some Amateurs. It need not be--it is a very simple inductance.

They were originally employed by the various telephone companies as loading coils and adapted to teletype applications by the early ham radioteletypers.

The core of a toroid is made of powdered iron suspended in an insulating and binding substance which is pressed into the form of a ring and cured with heat. The wiring is wound around the ring, with the conductor passing through the hole in the "doughnut" with each turn.

The toroid has found other applications in Amateur Radio in recent years, but we will concern ourselves only with the 88 millihenry variety at this time.



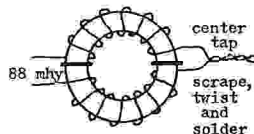
88 MILLIHENRY TOROID  
Shown 70% size

The finished 88 mhy toroid is usually a little over an inch in diameter and about one-half inch thick. There are two windings, separated by two small cardboard or plastic barriers, with one wire end on each side of both barriers. Each coil, is measured alone, has an inductance of about 22 mhy, and a d. c. resistance of about 4.2 ohms.

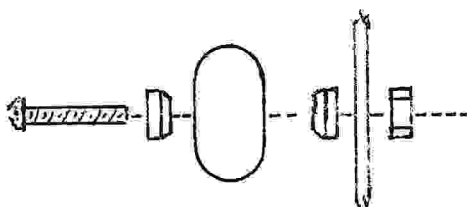
In telephone practice, these toroids are used to load the line to compensate for the capacity between the wires of a "pair." They are connected in series with one leg and the other coil--on the same toroid--in series with the other leg.

In Amateur use the coils are almost always connected in series--aiding, in which case the inductance is quadrupled, and should measure about 88 to 92 mhy. In some applications, the center-tap of the coil may be used. The Q of these toroids is very high, measuring over 100 at 1,000 Hz.

An interesting property of a toroidal inductor is that it has very low external field. This makes it possible to build filters that are very compact and may be mounted within one-eighth inch of a metal chassis; may be stacked with only one-eighth inch separation with practically no interaction and at audio frequencies require no shielding.



Mounting can be done very simply by placing a screw through the center hole and supporting the coil between a pair of bakelite or plastic washers. The author uses ordinary faucet washers--they make an excellent mounting for these small toroids.



Mount them so that the beveled faces of the washers are toward the coil. One precaution must be taken. BE SURE THAT ONLY ONE END OF THE SCREW TOUCHES THE METAL CHASSIS. If both ends should touch metal, a complete loop--or a shorted turn--would result, and the inductance would be changed.

The 88 mhy toroids are available from many commercial sources, some of whom advertise in the various Ham publications. Prices may range from about 25¢ to 50¢ apiece, depending on the quantity ordered. One word of caution, though--be sure you order the "unpotted" variety. They are nice and clean with gleaming enamel wire, while the potted variety is covered with pitch or tar compound.

## CHIT - CHAT

A Technician's Dumb Girl Friend swears that her boy friend has a job in a factory making short circuits for those ultra-midget radios. . . . Says he gave her a rabbit-ear antenna for Easter, but she doesn't think it'll have little ones because it was mismatched to the set. . . . She insisted she wanted to try on a single sideband. . . . thought it was a half-girdle. . . . She thinks High Q is found in a pool room, mu only comes from cows, and a chassis cradle is another name for a hammock. . . . She burned her boy friend by giving him a corona to smoke. . . . Claims a hut driver is an asylum chauffeur, and reports that flux is her favorite soap.

She swears that pot noise is only her stomach gurgling. . . . She thinks a mixer grid is a cooking utensil, a 6BY6 a piece of lumber, and that pickup arms are what guys in cars wave at her when she's waiting for the bus. She thinks that a gamma corrector is an English teacher. She believes a binding post is a wedding chapel, what a carrier wave is a woman sailor. She thinks a 12x4 tube is too big to be practical in circuitry, that plate dissipation is gluttony. . . . She thinks pliers are guys that try to get gals tanked up so they can break down their resistance, that a cathode follower is a member of some sort of religious sect. She says her efforts at learning how to solder are in a state of flux. That sync output will be up this year because all if these new homes will need modern kitchens. This dame gets tweeter and tweeter every day.

(From the Capeway Radio Club, via the ARNS Bulletin)



## FCC REPORT

(Continued from Page 1)

but would still involve the licensee of the repeater--with the output of a frequency not included in the Technician's privileges, in a possible violation of one or more rule sections.

If the repeater is completely automatic, it is of course impractical to call out any Technician transmission. Therefore, until the FCC comes up with a firm answer, repeater licensees should avoid crossing privilege band edges if they wish to stay clear of any possible violations.

One Oregon repeater is reported to be re-transmitting 146.94 MHz transmissions, including several 146.34/-146.94 MHz repeaters, in the high end of the 28 MHz phone band!

The growing use of the "Auto-Patch" with a repeater raises some interesting control questions. Using the proper tone code, a mobile station operator may switch the repeater audio circuits

to the telephone line and then dial a call in the telephone system.

If the repeater licensee is complying with the rules, he monitors and shuts the repeater off if any improper transmissions are made. Likewise, the mobile operator can (or should be able to) disconnect (hang up) the telephone call.

One of the control questions which will (hopefully) be resolved is whether the individual repeater licensee can exercise sufficient control of his repeater to permit operation while he is mobile. Presently, the fixed control position prevents him from using his own repeater while he is mobile! With the exception of a club station repeater authorization, Section 97.43 does not permit the individual repeater licensee to delegate the control function to some other operator.

If, as a result of its deliberations on the Repeater Docket (No. 18803), the FCC sees fit to provide for the control of a repeater by the licensee from his mobile unit (and I hope it does), the next step could be remote control and use of the fixed station from the licensee's mobile for communications with members of his family at his fixed station in his home.

One amateur suggests the 220 MHz for such operation and that full duplex might provide better control! This might be a way to really use up the 200 MHz band so as to combat the petition to use it for the Citizen's Radio Service.

It may raise more questions on just what are amateur communications than the Docket No. 19245 Notice of Inquiry has already raised!

## Heard on the Party Line

BY CHARLIE VORDERBERG  
W0CCT

(Reprinted from the Amateur Radio News Service "Bulletin")



It's easy to tell when you have a bargain in ham radio gear. It doesn't work.

-o-

A teacher on 40 meters the other day said, "A board in the hand is worth two courses in child psychology."

-o-

A WA7 says we can't blame the population explosion on band openings.

-o-

We don't fight women's lib. We'll talk to the YLs by the dozen on any band.

-o-

You can talk about us old bald headed ops all you want to, but we're the first to know when it's raining.

-o-

When the band opens, it is interesting to see just who gets the bull rolling.

-o-

When we got our ticket, we then could get on the air for what it costs today for a decent phone patch.

-o-

Computer operator to his machine when it makes a mistake, "you half-watt!"

-o-

Heard in the background from a 20 meter mobile operator, "Fasten your seat belt, dear," said the YF. "I'm going to park."

## Electronics News Bits

News has come from several sources that, on the basis that the market yields too small profit, AMPEX is terminating operation of its consumer products division that sells tape recorders for the consumer market. Warranties in effect will continue to be honored and tape--both prerecorded and blank, will continue to be sold.

-o-

Last year the Tandy Corporation--owners of Radio Shack--acquired Allied Radio stores in Illinois, Michigan, Texas, Missouri, Wisconsin, Indiana and Minnesota and established a national chain of Allied-Ham Shack radio stores.

Now the U. S. District Court in Chicago has before it, for approval, an agreement by Tandy to sell the stores in order to dispose of an antitrust suit. It was charged by the government that the store takeover eliminated competition along electronic parts dealers engaged in sales to hobbyists, according to news reports.

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FOR SALE---Ham-M rotator. Hy-Gain Beam 152T-3, five sections of tower totalling 45 feet, 100 feet of RG8U cable, 75 feet of cable for rotator. The beam will handle 2 KW on 20 meter AM and 1 KW on 10 and 15 meters. \$150 will take all. Will sell as a complete package or as units. Jim Davis, K0PKU, 4945 N. Cascade, Space 17, or phone 59808216.

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Psychiatrist to patient: "Your problem is that you had a happy childhood and you've got a guilt complex about it."

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# EMERY STUDIO

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# UNDERSTANDING COMPUTERS

By Robert "Bob" Shriner  
WA0UZO

From the Pueblo Ham Club "Grid Leak"

## Part 4

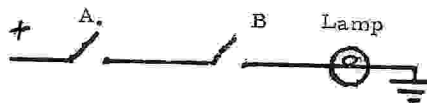
In previous articles I have attempted to give a basic understanding of computer arithmetic and basic operation.

As you remember, the computer works with Binary Arithmetic, i.e. 0 and 1, the computer utilizes voltage levels to represent the 0 and 1. We will use positive logic in this discussion, in other words, positive is 1 and negative is 0.

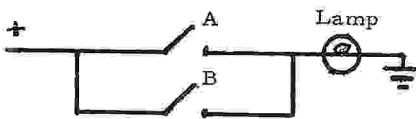
We have the following types of basic building blocks for the computer (1) AND gates (2) OR gates and (4) flip-flops.

### Logic operations.

- a. Definition of AND -- the AND OPERATION is merely a series circuit as illustrated below. Switch A AND switch B will cause the lamp to light.



- b. Definition of OR -- the OR OPERATION is merely a parallel circuit as illustrated below, switch A OR switch B will cause the lamp to light.



- c. Definition of NOT -- the NOT OPERATION is accomplished by an inverter circuit. A AND circuit that causes the lamp not to light when the switches are closed becomes a NOT circuit.
- d. Flip-flops -- a FLIP-FLOP circuit's primary purpose is to make a decision. It will take a bit of information and store it, add it to other data, etc. This can be done electronically, causing the flip-flop to change state upon receiving a signal of a bit of information, in other words, visualize the AND gate with the lamp replaced with a flip-flop. Every time switch A AND switch B is closed, the flip-flop will change state.

Naturally the use of switches cannot be tolerated in a computer because they are too slow, so electronic switches are used. The simplest is the diode switches illustrated below.

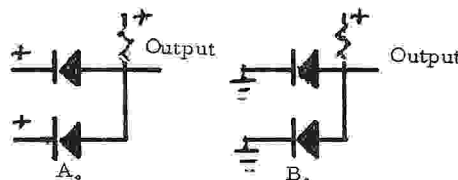


When switch A is closed, the output is 0 because the diode is conducting. When switch A is open, the output is 1 or high. Observe the switch connected in another way.



Now the output is high or 1 and CAN BE CHANGED TO LOW or 0 by reverting to the ground as shown in the first drawing.

Let us make a AND gate using diodes. Drawing A shows the diode AND gate with a HIGH or 1 output and B shows the same gate with a 0 output.



Note that the diodes are functioning as a voltage sensitive switch.

OR gates and NOT gates can be similarly set up.

I would like to go into transistor gates and the operation of flip-flops but I feel that this would be too lengthy for this article, so will pass it up and refer you to the many good books on the subject.

OK, now how does this affect you and your life? Well, as you have probably figured out, you have several AND gates around the house, for instance the electric blanket on your bed these cold winter nights. The switch must be on AND, the thermostat must send a

signal to turn on the heat. An example of an OR gate would be the porch light, it can be turned on from inside the house OR outside the house.

In building the new Pueblo repeater, many of these principles will be used, for instance the channel monitor uses a flip-flop to look at 2 or 4 different channels and a signal from the receiver and will cause it to lock in a stable state on that channel. Electronic switches made from transistors switch the oscillator frequency.

The touchtone decoder will use AND gates to achieve its output function--- each function will require 3 digits from the touchtone pad connected in a AND gate.

The big receiver on 146.34 will have a NOT gate connected to it so that if it is not functional the backup receiver will take over.

The carrier operated relay will use an AND gate connected so that if the receiver receives a signal AND the time out time is NOT times out, then the transmitter will come up. Several other gates will be used but they are too lengthy to be described here.

Well, I think I had better close this series of articles with the hope that it has been a little help in understanding computers and their functions.

-o-o-o-

(From the Denver Radio Club "The Round Table")

There's a "Liquid Crystal" in your future. Also in the future of your children. These crystals were aboard Apollo 14 and are now advertised at \$20 for a six digit display.

Recent writeups about these "new" items have appeared in several publications and the reason it is interesting to amateurs is that these crystals have the ability to change color, can turn from a clear to frosty at a change in temperature or by an electric current or even from a pollutant.

There are two main types of these crystals, cholesteric and nematic. The first changes colors and the second kind will switch back and forth between opaque and transparent.

As mentioned above, one will find liquid crystals in readouts and digital displays. They use virtually no power and are readable very easily. Uses also include auto dashboards, clocks and even meters that would have a liquid crystal line instead of a moving vane. Other uses almost surpass the imagination, one being a whole wall for a television picture.

Irate motorist: "He hit my car going the wrong way on a one way street, yet you say it's my fault, why?"

Officer: "His father is the mayor, his brother is chief of police, I'm engaged to his sister."

Two flies landed on a knife handle lying on a plate of cold cuts. They ate some of the meat, then flew off and promptly dropped to the floor, dead. The moral is: Don't fly off the handle when you're full of baloney."

## Time To Clean Up The Shack— Electrically, That Is

By Al McGuirk, K6UBK

(From the San Francisco Radio Club News via the Central California Radio Council Circle.)

-o-

It's time to clean up the shack--not the broom and dust pan type--but electrically. Everyone is not fortunate enough to have a circuit direct to the main service. There lies the problem, the sharing of a circuit with the rest of the household.

Normal general usage circuits are designed for 15 and 20 amperes over current protection. However, the additional load of the shack forces the OM to resort to the economy size 20 ampere fuze to the ex-YL can iron (or whatever) while he works DX.

Sometimes a one cent piece is inserted behind a fuze on the theory that you get greater mileage. It is rumored that in some of the more affluent household nickels and even dimes have been found behind fuzes. Just for the record, the moot on all three coins is the same.

Everying presents two problems: (1) the deterioration of insulation and burning of switch blades, contacts and fuze-holders; (2) when the circuit is lightly loaded (absence of normal household load) the fusing is too high to protect your equipment.

What to do about it? Reduce the circuit fuzes to their correct size or lower if you don't have nuisance tripping. Individual low amperage fusing should be provided--either panel mounted or in the card attachment cap. The cap method is preferred because it also protects the cord.

Speaking of cords--take a look at that bowl of spaghetti, and all those cube taps under the table behind equipment.

Electrical supply houses sell metallic raceway systems in three foot and six foot lengths with outlets on six inch centers. Ask to see Wire Mold catalog for \$1900 and #2000 series strips and associated fittings.

Effectively ground all metal chassis and enclosures. Fuze as low as possible and SWITCH TO SAFETY!

-o-o-o-o-

Calvin Coolidge, 30th president of the United States, chose not to run for the presidency again after his second term of office. But his customary terse announcement did not satisfy the newspapermen.

"Why do you refuse to run, Mr. President?" pressed one reporter. "Can you give us some details?"

"No room for advancement," stated the president.

## USSR Prefixes

With President Nixon leaving soon for a visit to the Soviet Union to help promote U. S. Soviet friendship, those Zero Beat readers who are "DX Hounds" may want to help out the administration by furthering such friendship through contacts via Amateur Radio. For the benefit of such operators, we are printing a list of USSR prefixes which originally appeared in 73 magazine and was reprinted by the "W6SD Carrier." The list includes Russian club, individual and VHF prefixes with their locations.

CLUB STATION	INDIVIDUAL STATION	VHF STATION	LOCATION
UK1	UA1	RA1	European USSR
UK2	UA2	RA2	Kaliningrad
UK2	UC2	RC2	Byelorussia SSR
UK2	UP2	RP2	Lithuanian SSR
UK2	UQ2	RQ2	Latvian SSR
UK2	UR2	RR2	Estonian SSR
UK3	UA3	RA3	European USSR
UK4	UA4	RA4	European USSR
UK5	UB5	RB5	Ukranian SSR
UK5	UO5	RO5	Moldavian SSR
UK6	UA6	RA6	European USSR
UK6	UD6	RD6	Azerbaijan SSR
UK6	UG6	RG6	Armenian SSR
UK6	UF6	RF6	Georgian SSR
UK7	UL7	RL7	Zazakh SSR
UK8	UH8	RH8	Turkoman SSR
UK8	UI8	RI8	Uzbek SSR
UK8	UJ8	RJ8	Tadzhik SSR
UK8	UM8	RM8	Kirgisk SSR
UK9	UA9	RA9	Asiatic USSR
UKØ	UAØ	RAØ	Asiatic USSR

A demonstration salvage and recycle system which is being installed in Ohio will handle 50 tons of waste during an eight hour shift. This pulping-masticating-segregating process will yield eight tons of pulped fiber, four tons of metal and four tones of glass which are acceptable for reuse by industry.

As regards the economics of recycling waste, we spend four billion dollars a year to collect and dispose of our garbage, yet the Bureau of Mines estimates that the value of metal alone in our waste exceeds five billion dollars.

(From "Auto Call" of the Foundation for Amateur Radio).

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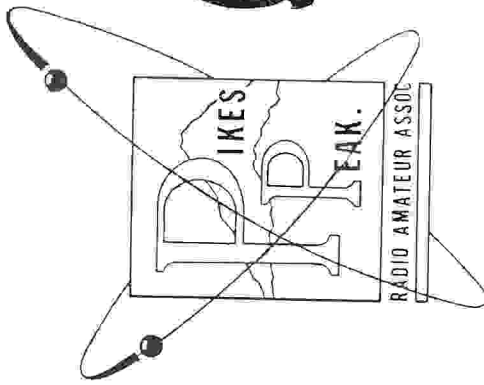
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*May 1972*



## FIELD DAY

How Should It Be Conducted?  
An Emergency Test? A Social Event?  
A Contest?

*Where Should It Be Located?*



*Attend The May Meeting  
Let Your Ideas Be Known*